europass Curriculum vitae

PERSONAL INFORMATION

Mario Maurelli

via Saldini 50, 20133 Milano, Italy

mario.maurelli@unimi.it

WORK EXPERIENCE

Apr 2019 – today — Research assistant (Ricercatore tipo B, 3-year tenure track)

Dipartimento di Matematica, Università degli Studi di Milano, Italy

Probability and statistics

Aug 2018 – Mar 2019 — Lecturer in applied probability

School of Mathematics, University of Edinburgh, UK

on leave

Apr 2018 – Mar 2019 — Research fellow

Department of Mathematics, University of York, UK

supported by Newton International Fellowship on “Stochastic Euler Equations and the Kraichnan model” as main investigator, sponsor Prof. Dr. Z. Brzezniak

Apr 2015 – Mar 2018 — Research assistant (wissenschaftlicher Mitarbeiter)

Institut für Mathematik, Technische Universität Berlin (TUB), Germany

until July 2016 supported by Prof. Dr. P.K. Friz’s ERC Starting Grant “Rough path theory, differential equations and stochastic analysis”

Oct 2014 – Mar 2018 — Research assistant (wissenschaftlicher Mitarbeiter)

Weierstrass Institute for Applied Analysis and Stochastics (WIAS), Berlin, Germany

supported by the Matheon projects C-SE8 (until May 2017) and C-SE17 (from June 2017) “Stochastic methods for the analysis of lithium-ion batteries”, heads Prof. Dr. J-D. Deuschel (from June 2017), Prof. Dr. W. Dreyer, Prof. Dr. P.K. Friz, Dr. C. Guhlke (from June 2017)

EDUCATION AND TRAINING

Nov 2011 – Sep 2014 — PhD scholarship in Mathematics

Scuola Normale Superiore, Pisa, Italy

Mar 18, 2016: Diploma di Perfezionamento (PhD degree) in Mathematics at Scuola Normale Superiore, with marks 70/70 cum laude (best possible grade), with thesis “Regularization by noise in finite dimension”, advisor Prof. F. Flandoli.

Oct 2006 – Sep 2011

Bacheror's and Master's student in Mathematics

Università di Pisa and Scuola Normale Superiore

- Dec 19, 2012: Diploma di Licenza in Mathematics at Scuola Normale Superiore, with marks 70/70 (this is the final degree obtained at Scuola Normale Superiore after completion of Bachelor's and Master's studies).
- Sep 30, 2011: Laurea Magistrale (Master's degree) in Mathematics at Università di Pisa, with marks 110/110 cum laude, with thesis "Stochastic differential equations with rough coefficients", advisor Prof. F. Flandoli.
- Sep 25, 2009: Laurea Triennale (Bachelor's degree) in Mathematics at Università di Pisa, with marks 110/110 cum laude, with thesis "Stochastic flows and isotropic Brownian motion" (in Italian), advisor Prof. F. Flandoli.

PERSONAL SKILLS

Research topics

- SPDEs in fluid dynamics: stochastic 2D Euler equations, Kraichnan model.
- McKean Vlasov SDEs and corresponding interacting particle systems: application to a battery model; relations with rough paths and large deviations.
- Regularization by noise for SDEs and SPDEs: regularization for linear transport equations, scalar conservation laws; zero-noise selection.

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B1/B2	B1/B2	B1/B2	B1/B2	B1/B2
German	A1/A2	A1/A2	A1/A2	A1/A2	A1/A2

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2: Proficient user
Common European Framework of Reference (CEF) level

Communication skills See teaching activities and conferences, workshops and schools

Organisational / managerial skills and membership

- Organizer, with P.K. Friz, T. Lyons, T. Nilssen, of the "Berlin-Oxford young researcher meeting on applied stochastic analysis", at Weierstrass Institute and at Technische Universität in Berlin from May 18 to 20, 2017.
- Organizer, with H. Boedihardjo, K. Chouk, P.K. Friz, T. Lyons, H. Oberhauser, of the "Berlin-Oxford young researcher meeting on applied stochastic analysis", at Weierstrass Institute in Berlin from January 27 to 29, 2015.
- Member of "Istituto Nazionale di Alta Matematica" (INdAM, which groups together most of Italian mathematicians), group "GNAMPA" (analysis, probability and their applications).

Computer skills
- Knowledge of office programs (Words and similar, Excel and similar)
- Basic knowledge of MATLAB for simulations of differential equations, C++ and R.

Driving licence B

Publications

BFM16 Z. Brzezniak, F. Flandoli, M. Maurelli, Existence and uniqueness for stochastic 2D Euler flows with bounded vorticity, Arch. Ration. Mech. Anal. 221 (2016), no. 1, 107–142.

DFMS18 J.-D. Deuschel, P.K. Friz, M. Maurelli, M. Slowik, The enhanced Sanov theorem and propagation of chaos, Stoch. Proc. Appl. 128 (2018), no. 7, 2228–2269.

GM18 B. Gess, M. Maurelli, Well-posedness by noise for scalar conservation laws, Comm. PDEs 43 (2018), no. 12, 1702–1736.

GGMFD18 C. Guhlke, P. Gajewski, M. Maurelli, P.K. Friz, W. Dreyer, Stochastic model for LFP-electrodes, Cont. Mech. Thermodyn. 30 (2018), no. 3, 593–628.

FMN14 F. Flandoli, M. Maurelli, M. Neklyudov, Noise prevents infinite stretching of the passive field in a stochastic vector advection equation, J. Math. Fluid Mech. 16 (2014), no. 4, 805–822.

M11 M. Maurelli, Wiener chaos and uniqueness for stochastic transport equation, C. R. Math. Acad. Sci. Paris 349 (2011), no. 11-12, 669–672.

Preprints

BFGM14 L. Beck, F. Flandoli, M. Gubinelli, M. Maurelli, Stochastic ODEs and stochastic linear PDEs with critical drift: regularity, duality and uniqueness, arXiv:1401.1530 (2014).

PhD thesis

PhDTh M. Maurelli, Regularization by noise in finite dimension, PhD Thesis, 2016.

Invited talks

01/2019 meeting in “Stochastic analysis”, University of Edinburgh (talk “McKean-Vlasov SDEs with irregular drift: large deviations for particle approximation”);

01/2019 winter school on “Stochastic PDEs and Mean-Field Games”, Università di Bologna (talk “McKean-Vlasov SDEs with irregular drift: large deviations for particle approximation”);

11/2018 workshop on “Calculus on Wasserstein Spaces and Related Fields”, University of Edinburgh (talk “Existence of vortex sheets for 2D stochastic Euler equations”);

08/2018 BIRS workshop on “Regularity and Blow-up of Navier-Stokes Type PDEs using Harmonic and Stochastic Analysis”, Banff (Canada) (talk “Existence of vortex sheets for 2D stochastic Euler equations”);

03/2018 “Stochastic Analysis Seminar” at University of Oxford (talk “McKean-Vlasov SDEs with irregular drift: large deviations for particle approximation”);

01/2018 “CASA colloquium” at Technische Universiteit Eindhoven (talk “A McKean-Vlasov SDE with reflecting boundaries”);

12/2017 “Probability, stochastic analysis and statistics seminars” at Universita’ di Pisa (talk “A McKean-Vlasov SDE with reflecting boundaries”);

09/2017 “Séminaire de Probabilité et Statistiques” at Laboratoire J.A. Dieudonné in Nice (talk “Regularization by noise for scalar conservation laws”);

02/2017 “Stochastic analysis day” at Universita’ di Pisa (talk “Regularization by noise for scalar conservation laws”);

10/2016 “Mathematical finance and stochastic analysis seminars” at University of York (talk “Regularization by noise for scalar conservation laws”);

07/2016 “AIMS Conference on Dynamical systems, differential equations and applications” in Orlando (USA) (talk “Regularization by noise for stochastic scalar conservation laws”);

06/2016 “Workshop on stochastic analysis” at Universidade Estadual de Campinas (Brazil) (talk “Regularization by noise for transport-type equations via stochastic exponentials”);

05/2016 meeting on “SPDEs and applications”, in Levico Terme (Italy) (talk “Regularization by noise for continuity equation via Young drivers”);

04/2016 meeting on “Rough paths, regularity structures and related topics” at Mathematisches Forschungsinstitut Oberwolfach (talk “Enhanced Sanov theorem and large deviations for interacting particles”);

04/2016 “Berlin-Leipzig workshop in analysis and stochastics” at Max Planck Institute for Mathematics in the Sciences, Leipzig (talk “Enhanced Sanov theorem and robust propagation of chaos”);

01/2016 “Oberseminar Analysis - Probability” at Max Planck Institute for Mathematics in the Sciences, Leipzig (talk “Regularization by noise for linear SPDEs”);

12/2015 workshop on “Stochastic limit analysis for reacting particle systems” at Weierstrass Institute in Berlin (joint talk with Wolfgang Dreyer on “Theory of many-particle electrodes”);

10/2015 “Stochastic analysis seminar” at Imperial College London (talk “Enhanced Sanov theorem for Brownian rough paths and an application to interacting particles”);

07/2014 “Berlin-Oxford young researcher meeting on applied stochastic analysis”, at Oxford-Man Institute (talk “Regularization by noise for SDEs: the Hörmander case”);

12/2013 “Berlin-Oxford young researcher meeting on applied stochastic analysis”, at Weierstrass Institute in Berlin (talk “Regularization by noise for ODEs: regularity implies path-by-path uniqueness, via duality”);

06/2013 “East Midlands stochastic analysis seminar”, at University of York (talk “Regularization by noise: uniqueness and regularity via transport equation”).

Periods of visit (at least two weeks)

06/2018 Mathematisches Forschungsinstitut Oberwolfach, for the Research in pairs program with G. dos Reis and J. Tugaut, on a metastability problem for a McKean-Vlasov SDE;

05/2018 Stefan Banach International Mathematical Center in Warsaw, invited as junior scientific leader in the Simons semester “PDEs/SPDEs and functional inequalities”;

06 to 07/2013 Hausdorff Center for Mathematics in Bonn, to work with L. Beck and to attend M. Hairer’s Lipschitz lectures on renormalization theory and stochastic PDEs;

10 to 12/2010 École Normale Supérieure Paris, to study generalized stochastic flows under the supervision of Y. Le Jan.

Schools attended

04/2017 CIRM school on “Stochastic Dynamics out of Equilibrium”, Marseille, lectures by C. Landim on hydrodynamic limit of interacting particle systems, P. Dai Pra on “Stochastic mean-field dynamics and applications to life sciences”, B. Leimkuhler on “Molecular and particle dynamics simulation” and P. Degond on “Collective dynamics in life sciences”.

08/2016 CIME school on “Singular random dynamics”, Cetraro (Italy), lectures by M. Hairer on regularity structures , M. Gubinelli on energy solutions, P. Souganidis on Hamilton-Jacobi equations with rough signals and N. Tzvetkov on nonlinear dispersive equations with random initial data.

02/2014 Schools on “Rough paths and PDEs” and on “Deterministic and stochastic Navier-Stokes equations”, in Toulouse.

06/2013 School on KPZ equation and rough paths, at Lebesgue Center in Rennes, lectures by M. Hairer on regularity structures and KPZ equation and P. Friz on rough paths theory.

12/2012 School on stochastic analysis and control of fluid flow, at IISER in Trivandrum (India).

07/2010 Summer school at Saint-Flour (France), lectures (among others) by F. Flandoli on random perturbation of PDEs.

TEACHING ACTIVITIES

Teaching activities

Apr to Jun 2019 Lectures for one third of the course “Probability and Statistics”, held by Prof. Dr. Alessandra Micheletti, for first-year Bachelor’s students in Environmental Sciences.

Oct 2017 to Feb 2018 Lectures (“Vorlesung”, in English) of the course “Advanced topics in stochastics - Regularization by noise”, at TU Berlin for Master’s and PhD students in Mathematics, part of the Berlin Mathematical School advanced courses.

Apr to Jul 2017 Exercise class (“Übung”, in English) for the course “Measure and integration theory”, held by Dr. M. Slowik at TU Berlin for Bachelor’s and Master’s students in Mathematics.

Nov 2016 to Feb 2017 Tutoring class (“Tutorium”, in English), with two other assistants, for the course “Numerical mathematics for Engineers II”, held by Prof. Dr. R. Kruse at TU Berlin for Master’s students in Engineering.

Dec 2011 to Jun 2014 Teaching assistance (tutoring) to first-year Bachelor’s students in Mathematics at Scuola Normale Superiore.

Oct to Nov 2012 Exercise class (in Italian) for half of the course “Istituzioni di probabilità” (on stochastic processes and SDEs), held by Prof. F. Flandoli at Università di Pisa, for first-year Master’s students in Mathematics.

Nov 2011 to May 2012 Exercise class (in Italian) for half of the course “Introduction to measure and integration theory”, held by Prof. L. Ambrosio at Scuola Normale Superiore, for third-year Bachelor’s students in Mathematics.